

**Continental Resources Various Well Sites  
Full Compliance Evaluation (FCE)  
On-Site Clean Air Act (CAA) Inspections**

**Inspection Date:** August 21, 2013

**Inspection Report Date:** December 10, 2013 FINAL

**EPA Representatives:** Alexis North  
Hans Buenning

**Tribal Representatives:** Martina Turner  
Herbert Danks

**Company Representatives:** Stacy Aguirre  
Todd Senescall

**Inspection Report Prepared By:** Alexis North & Hans Buenning

**Inspection Report Reviewed By:** Cynthia Reynolds

**Last CAA Inspection:** Never

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**Overall Inspection Finding**

These facilities were in compliance with their only applicable requirements at 40 C.F.R. Part 63 National Emissions Standards for Hazardous Pollutants, Subpart ZZZZ (MACT ZZZZ).

**General Source Information**

The following facilities were evaluated for compliance with applicable regulations MACT ZZZZ, Tribal Minor NSR and 40 C.F.R. Part 49, Subpart K, Federal Implementation Plan for Oil and Natural Gas Well Production Facilities; Fort Berthold Indian Reservation (Mandan, Hidatsa and Arikara Nation), North Dakota (Fort Berthold FIP).

Table 1: List of Inspected Facilities

Well Name	Lat/Long	Date	Time In	Time Out
Rose No. 1	47.943286, -102.709395	8/21/2013	1:15 pm	1:50 pm
Wolf Federal No. 1	47.93622, -102.700575	8/21/2013	2:00 pm	2:20 pm
Fox No. 1	47.944591, -102.702004	8/21/2013	2:30 pm	2:45 pm
Gudbranson No.1	47.938951, -102.692995	8/21/2013	2:50 pm	3:15 pm

### **Potential to Emit (PTE)**

The following PTE estimates were provided to the EPA via email from Todd Senescall on 9/12/13, and are included as Appendix B of this report. The calculations are based on the North Dakota Department of Health's (NDDH's) emissions calculations workbook housed on their website at <http://www.ndhealth.gov/aq/NewGuidanceOilandGasPro.htm>.

Table 2: PTE Summary (Including Controls on Tanks)

Emission Points	Tons per Year (tpy)					
	Sulfur Dioxide (SO <sub>2</sub> )	Nitrous Oxides (NO <sub>x</sub> )	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Hydrogen Sulfide (H <sub>2</sub> S)	Total Hazardous Air Pollutants (HAPs)
Fox No. 1	0	7.01	7.02	1.67	0	0.02
Gudbranson No.1	0	6.99	6.92	2.52	0	0.05
Rose No. 1	0	5.69	8.40	2.78	0	0.06
Wolf Federal No. 1	0	7.01	6.98	1.54	0	0.02

Continental uses the NDDH's emission estimation workbook that automatically accounts for control measures on tanks. Thus, while there is no enforceability for the tank controls, they are accounted for here. However, the low production rates (10-15 barrels a day) tank emissions, even without the 98% controls, are still less than 1 ton per year of VOCs for each site above. Gas from the 3-phase separator (oil, gas, water separator) is routed to a sales pipeline destined for the Hess Gas Plant. See Appendix B for detailed emissions calculations for more information.

Additionally, these facilities are well below the permitting thresholds for Clean Air Act permitting programs (Title V and PSD).

### **Production Data**

The following table shows the production amounts for the inspected facilities listed in Table 1. The table below shows production amounts from January through June, 2013, as reported in the Monthly Production Report Publications housed under "General Statistics" on the North Dakota Industrial Commission's webpage at <https://www.dmr.nd.gov/oilgas/>.

Table 3: Production Data

January-June 2013									
Company	Facility	Field	Formation	Oil (bbl)	Water (bbl)	Days	Runs (bbl)	Gas (Mcf)	Gas Sold (Mcf)
Continental	Rose No. 1	Antelope	Sanish	1896	45	180	1976	1152	1152
Continental	Wolf Federal No. 1	Antelope	Sanish	2917	142	181	3058	1214	1214
Continental	Fox No. 1	Antelope	Sanish	2848	155	175	3118	1662	1662
Continental	Gudbranson No.1	Antelope	Sanish	1560	124	173	1594	446	0

### **Tribal Minor NSR Applicability**

During the onsite inspections, Stacy Aguirre stated these four well sites are below 5 tons per year of Volatile Organic Compounds (VOCs) and thus not subject to the Tribal Minor NSR registration provisions for existing true minor sources. As depicted in the table below, the registration threshold for VOCs is 5 tons per year.

Table 4: Tribal Minor Source Registration Thresholds

Tribal Minor NSR Existing Minor Sources- Registration Thresholds	Tons per Year (tpy)				
	Sulfur Dioxide (SO <sub>2</sub> )	Nitrous Oxides (NO <sub>x</sub> )	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Hydrogen Sulfide (H <sub>2</sub> S)
	10	10	10	5	2

### **MACT ZZZZ Applicability**

These facilities are area sources for MACT ZZZZ. The AJAX DPC 60 engines are existing engines (constructed before 6/12/06), less than 500 hp, non-emergency, spark ignition and 4 stoke lean burn. These engines are subject to management practices at 40 C.F.R. § 63.6603(a) and Table 2d(6) of the rule beginning 10/19/13. There is no notification requirement for these engines.

### **Fort Berthold FIP Applicability**

These facilities were completed prior to the August 12, 2007 applicability date at 40 C.F.R. § 49.416 and have not had recompletions or tertiary recovery, thus these well sites are not subject to the Fort Berthold FIP.

### **General Inspection Observations and Commentary**

Hans Buenning, Martina Turner and Herbert Danks met Continental Resources' Environmental Supervisor, Stacy Aguirre and Senior Environmental Specialist, Todd Senescall at the Rose No. 1 well site at 1:15 pm. Following that initial inspection, Hans and Alex in one car, and Martina and Herbert in an MHA Energy vehicle, followed Stacy and Todd to the facilities listed in Table 1.

These are well sites drilled in 1986-1990, with no recompletions or tertiary recovery performed since. Well site configuration at each of the facilities was a well head routed to a 3-phase separator where resulting gas is sent to sales and water and oil are then sent to a heater treater where oil and water were routed to tanks. It is possible to also route the separator gas to power the heater treater and/or AJAX engine or flare. When the majority of the gas is sent to sales, as the production report suggests, the heater treater and the AJAX engine are connected to propane tank for fuel.

Oil and water produced and stored on the well sites are trucked off for sales (oil) and disposal (water).

Due to an outage at the Hess Gas Plant, gas from the 3-phase separator was routed to the pit flare at all four sites. Flames were visible in the pit flares at all four sites.

Three out of twelve (25%) storage tanks observed had leaking components using the IR camera. See the attached appendix for a detailed list of all IR videos. There was no regulatory requirement for these leaks as these sites are not subject to any NDDH regulation or the FIP.

## APPENDIX A: IR & PHOTO LOGS

### IR LOG

OPERATOR	SITE	DATE	TIME	FRAME	FORMAT	PHOTOGRAPHER	DISTANCE Camera to Leak	DESCRIPTION	<u>TVA or PID (P) Reading (if any)</u>	<u>notes</u>
Continental	Rose No. 1	8/21/2013	1:35 PM	MOV_1940	mp4	HBuenning		Leaking plug bolt in salt water storage tank	N/A	
Continental	Rose No. 1	8/21/2013	1:39 PM	MOV_1941	mp4	HBuenning		Leaking thief hatch on tank 111981	N/A	
Continental	Wolf Fed No. 1	8/21/2013	2:05 PM	MOV_1942	mp4	HBuenning		Leaking salt water tank thief hatch	0.201	PID in ppm
Continental	Gudbranson No.1	8/21/2013	3:08 PM	MOV_1943	mp4	HBuenning		Video of flare during gas surge event (reason unknown)	N/A	

### PHOTO LOG

Date	Time	Location	File ID		Description
8/21/2013	1:20 PM	Rose No. 1	RIMG0028	.jpg	Signage
8/21/2013	1:58 PM	Wolf Federal No. 1	RIMG0029	.jpg	Signage
8/21/2013	1:59 PM	Wolf Federal No. 1	RIMG0030	.jpg	Tanks
8/21/2013	1:59 PM	N/A	RIMG0031	.jpg	Flare in the distance from Wolf Federal No.1
8/21/2013	2:30 PM	Fox No. 1	RIMG0032	.jpg	Signage
8/21/2013	2:31 PM	Fox No. 1	RIMG0033	.jpg	Tanks
8/21/2013	2:55 PM	Gudbranson No.1	RIMG0034	.jpg	Signage
8/21/2013	2:55 PM	Gudbranson No.1	RIMG0035	.jpg	Tanks
8/21/2013	2:56 PM	Gudbranson No.1	RIMG0036	.jpg	Well site

